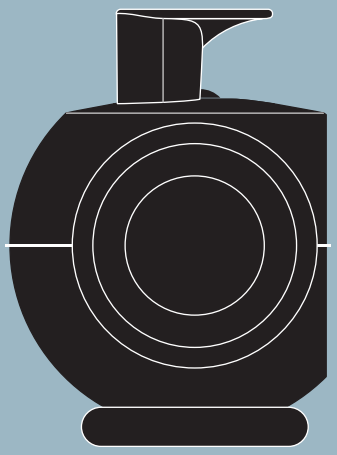
BeoLab 3

Type 6881, 6882, 6883, 6884, 6885, 6886, 6887, 6888
from serial no. 19355490

Service Center repair guide
English



BANG & OLUFSEN

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There is no Brief operation guide in this Service Center repair guide.
Instead an english version of the user guide is enclosed the back-up suitcase.

How to service

Front line service

BeoLab 3 must be serviced in the customers home when it comes to electrical symptoms or exchange of mechanical parts. In this way you avoid having to make more than one visit and using minimum of time on the case, all for the benefit of the customer.
The loudspeaker dimensions are H-215mm, W-135mm, L-162mm, 2,55 kg and the carbon box for two loudspeakers are H-350mm, B-360mm, D-380mm, 6,5 kg.
In the customers house it is possible to replace :
The electrical parts :

- The loudspeaker units
- The passive radiators
- The complete main chassis
- The standby LED PCB

The mechanical parts :

- The lens for the tweeter
- The cabinet
- The foot

A sound level adjustment procedure is necessary when replacing one or more loudspeaker units, or replacing the main chassis. This is done easily be means of click potentiometers.
Replacements of the cabinet can be done at the customers as it consist of a complete cabinet with gaskets and other materials there are needed when exchanging the complete cabinet. Only the lens, the loudspeaker units, the main chassis and the foot must be put onto the new cabinet.

Back-up Suitcase

The service Back-up Suitcase will contain all needed electrical parts, that is needed to service a failing speaker. All mechanical parts must be ordered separately from B&O Struer DK. All the needed tools and a Service Center Repair Guide will be found in the suitcase.

Converting mains voltage supply

If it is necessary to change voltage supply, e.g. when moving between two countries, this can be done easily in the BeoLab 3 speakers (on module 01 – P504). You will only need to mount/remove a jumper. The fuse will be a global type, so here is no need for replacement. Remember to order new mains cables.
See illustration on page 6.11

Type survey

Variants	Type	Jumper P504	Mains cable
EU	6891	NOT mounted	6100273
GB	6892	NOT mounted	6200327
US/CDN	6893	Mounted	6100307
JAP	6894	Mounted	6100331
AUS	6895	NOT mounted	6100332
KOR	6896	NOT mounted	6100386

Warnings

ESD

STATIC ELECTRICITY MAY DESTROY THE PRODUCT

When electrical replacements or disassembly is taking place use an ESD-mat. The internal electronic are very sensitive to static electricity.

General warnings

Wear cotton gloves to avoid any fingerprints on the product.

The surfaces on the product is very sensitive, so handling should be done with great care to avoid damage.

Cleaning of the speaker surfaces should only be done a lint-free cloth, which you have dipped in lukewarm water and wrung firmly.

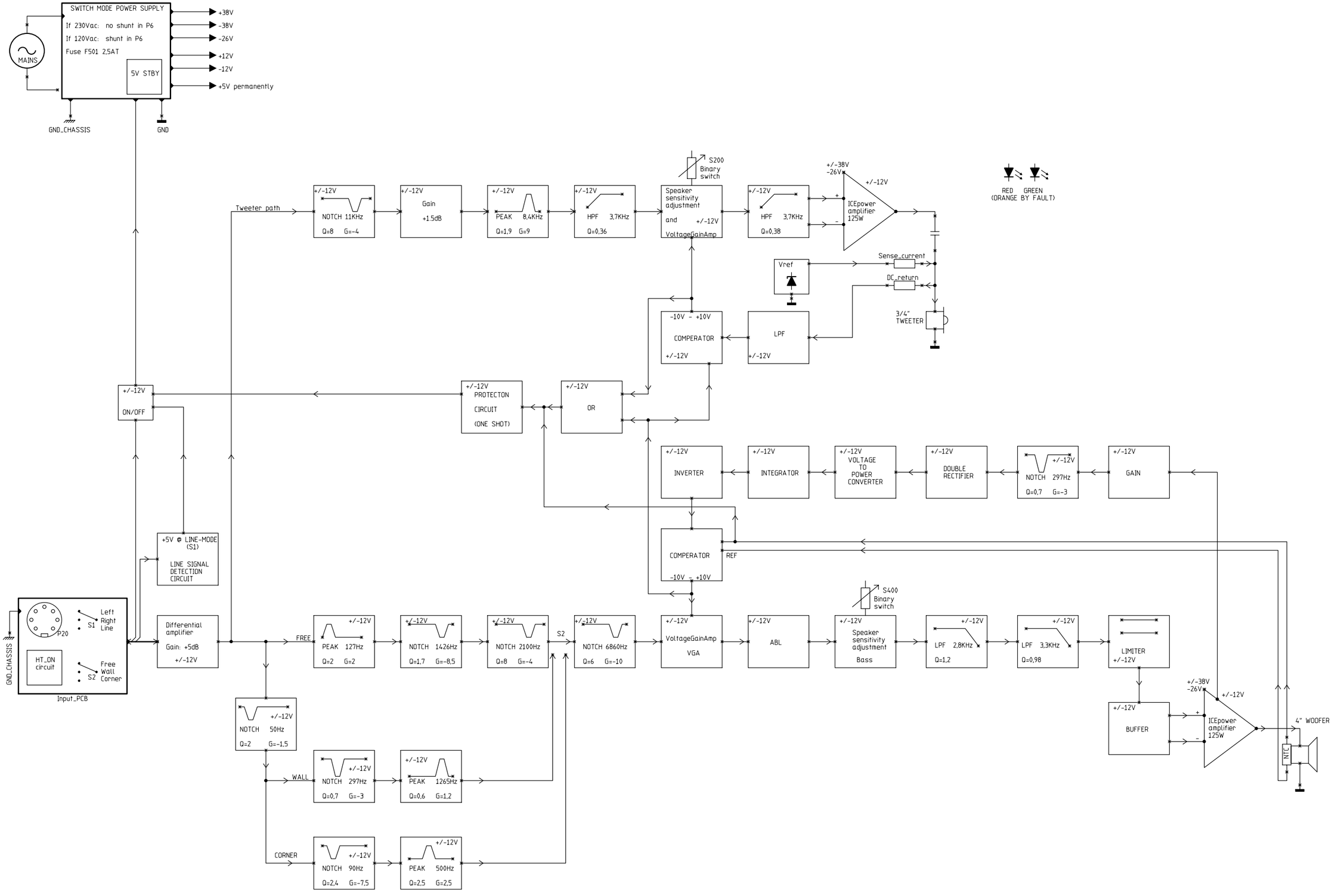
When doing disassembly small aluminum chips can occur when screws are removed. Make sure all these small aluminum chips are removed from the speaker cabinet before assembly is done. These aluminum chips can resolve in internal shortcuts, and damage the Main chassis badly, if not removed.

If the speaker needs to be transported, a product cover can be ordered from B&O (ordrenr. can be found in the back of this guide)

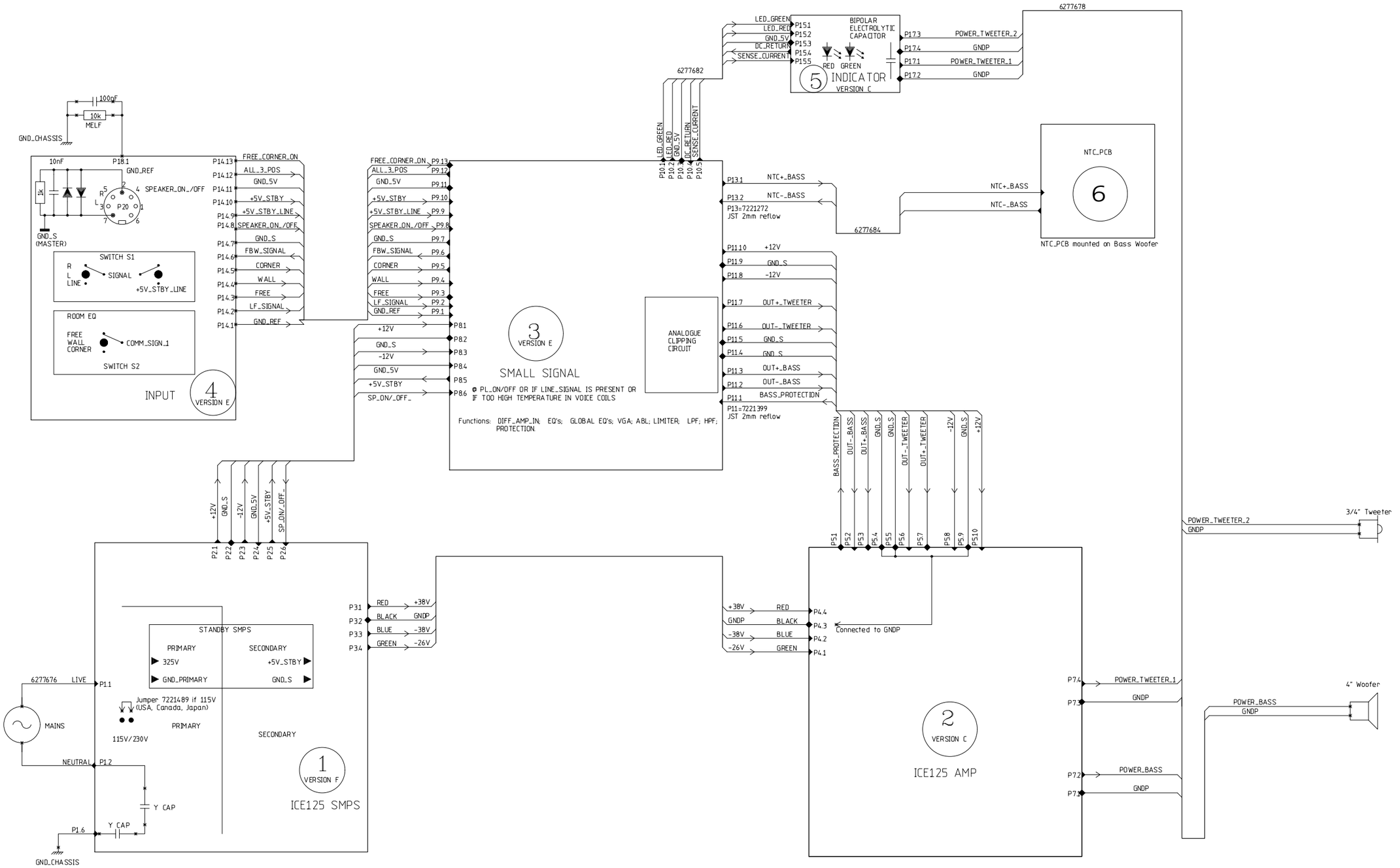
Specification guidelines for service use	**BeoLab 3**
Type no. 6891	Europe – 230V
Type no. 6892	England – 230V
Type no. 6893	USA, Canada – 120V
Type no. 6894	Japan – 100V
Type no. 6895	Australia – 240V
Type no. 6896	Korea – 220V
Dimensions for one speaker	Height – 215mm (223mm on foot)
	Width – 135mm
	Length – 162mm
	Weight – 2,55 Kg
Box for two loudspeakers	Height – 350mm
	Width – 360mm
	Depth – 380mm
	Weight – 6,5 Kg
Input sensitivity	
Power Link	125mV – 88dB SPL
Line in (via Power Link socket, pin 3)	125mV – 88dB SPL (auto switch on)
Switch off time	3 min.
Maximum Sound Pressure Level	94 dB (Stereo, pair)
Power Amplifiers	2 (Class D ICEpower)
Power amplifier, bass	125 Watts, Class D, ICEpower
Power amplifier, treble	125 Watts, Class D, ICEpower
Long Term Maximum, output per amplifier	Bass : 220 Watts (4 Ohm)
	Treble : 120 Watts (8 Ohm)
Effective Frequency range	50 – 20.000 Hz
Crossover frequency	3300 Hz
Cabinet principle	Double passive radiator system
Magnetically shielded	Yes
Net volume, bass	1.5 litres
Woofer	4” (101,6 mm)
Passive radiators	2 x 4” (101,6 mm)
Treble	¾” (19mm)
Directivity control Treble	*Acoustic Lens Technology
Bass equalization	ABL (Adaptive Bass Linearization)
Protection	Thermal protection
Connections	
Power Link - input	1 (PL MKIII Semi-Balanced)
Mains – input	1
LINE in – input (via Power Link socket – pin3)	1 (auto switch on)
Indication	1 tri-color LED
Green	On
Red	Stand-by
Orange	Protection (see “Service Hints”)
Operations	
Switch for :	Left – Right – LINE
Switch for :	Wall – Corner – Free
Power consumption	Typical : 7 Watts
	IEC65 : 20 Watts
	Stand-by : 0.2 Watts

*ALT (or Acoustic Lens Technology) is licensed from Sausalito Works LLC.

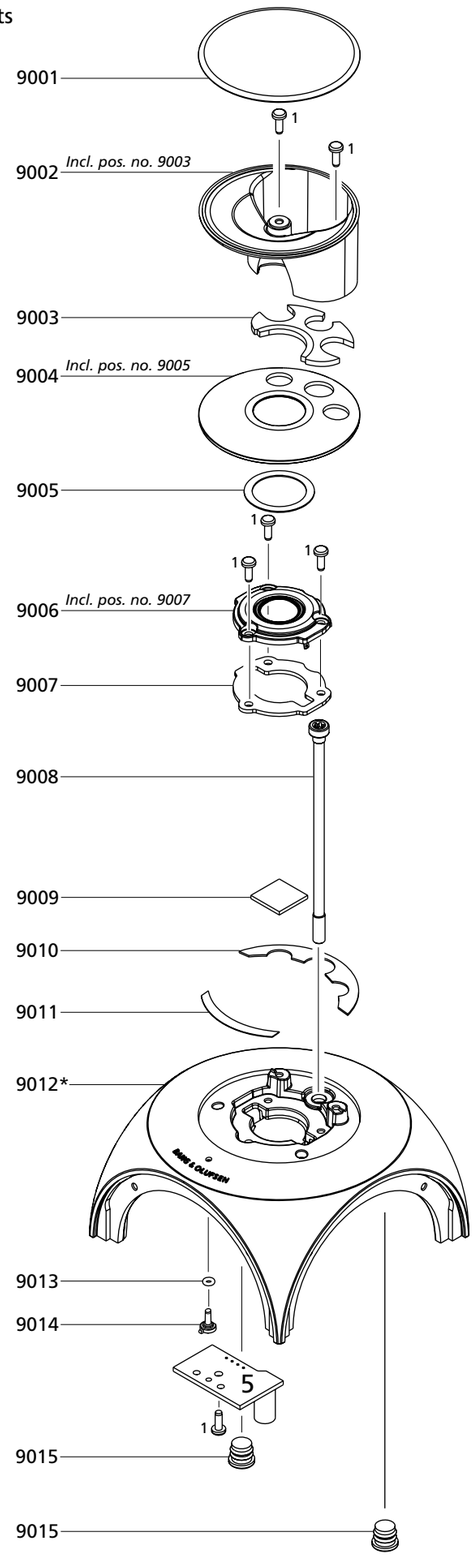
Overall block diagram



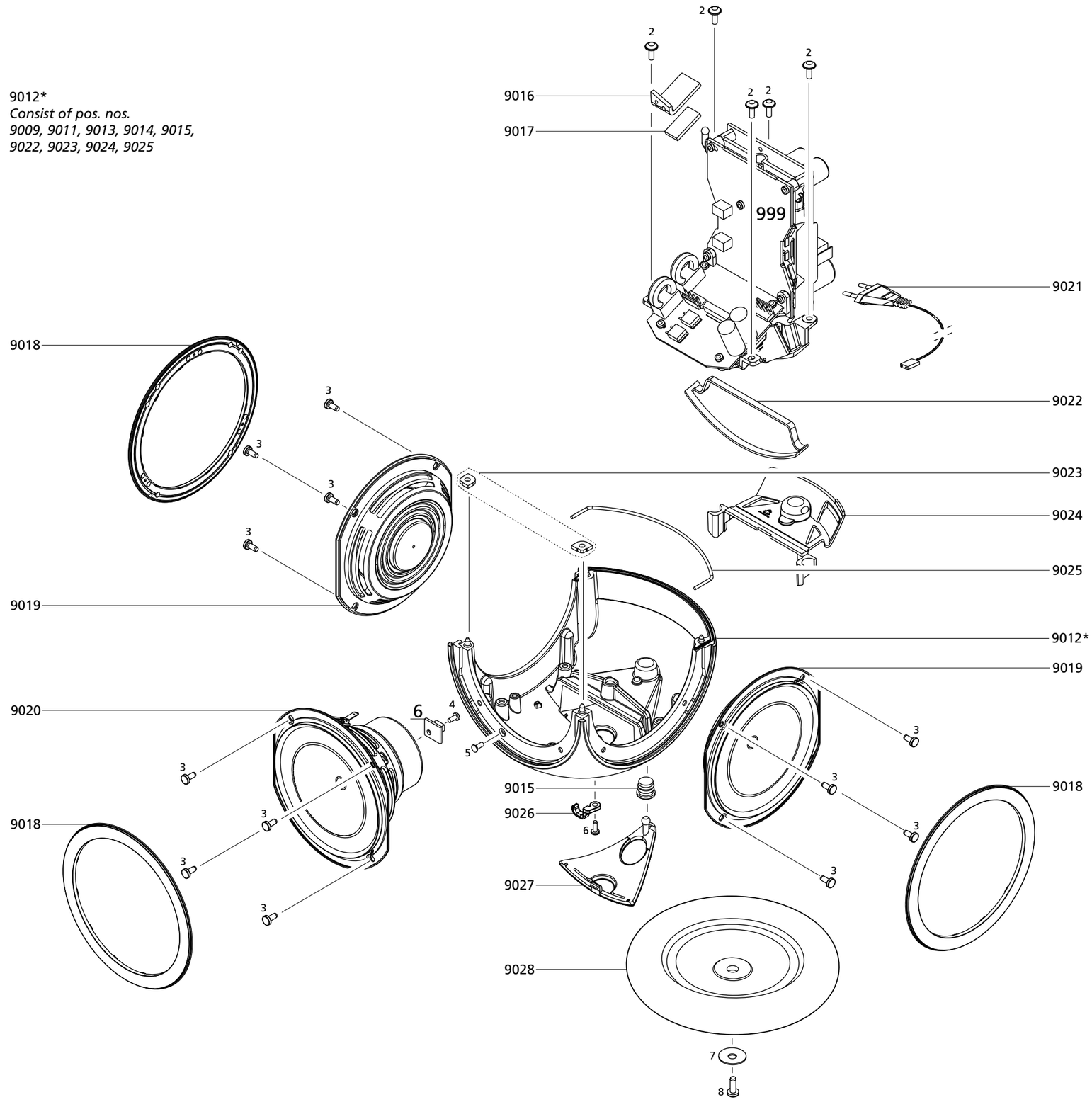
Wiring diagram



Available parts
BeoLab 3



9012*
Consist of pos. nos.
9009, 9011, 9013, 9014, 9015,
9022, 9023, 9024, 9025



BeoLab 3

9001	3459461	Top plate
9002	3452044	Acoustic lens w/filt
9003	3912004	Filt
9004	3459462	Tweeter cover w/gasket
9005	3947851	Gasket
9006	8480381	Tweeter 19mm w/gasket
9007	3947852	Gasket
9008	2019002	Screw
9009	2622011	Thermal conductive rubber
9010	3947057	Gasket
9011	3947061	Spacer
9012	3430008	Cabinet incl. pos. nos. 9009, 9011, 9013, 9014, 9015, 9022, 9023, 9024, 9025
9013	3947063	O-ring
9014	6150004	Light guide
9015	2930181	Rubber insert
9016	3358031	Heat sink
9017	2622026	Thermal conductive rubber
9018	2954002	Bezel
9019	8480383	Passive radiator
9020	8480382	Woofer
9021	6100273	Mains lead, EU
	6100329	Mains lead, GB
	6100307	Mains lead, US
	6100331	Mains lead, J
	6100332	Mains lead, AUS
	6100386	Mains lead, KOR
	6100047	Mains lead, CN
9022	3947850	Packing panel
9023	3947066	Gasket, set
9024	3172001	Cover
9025	2732008	Gasket
9026	3390661	Wire holder
9027	3160099	Leaf
9028	2752091	Rubber foot
PCB5	8001138	Indicator
PCB6	8100090	NTC
PCB999	8052223	Main chassis
	7221489	PCB1 - P504 Jumper for 115V mains conversion

Survey of screws etc.

1	2019031	Screw 3.5 x 10mm
2	2013013	Screw 3.5 x 10mm
3	2019030	Screw 3.5 x 8mm
4	2015162	Screw 3 x 6mm
5	2013010	Screw 3 x 8mm
6	3390661	Screw 3 x 8mm
7	3390661	Washer
8	3390661	Screw 6 x 12mm

Packing

3917147	Foam foil
3396208	Set of foam
3392794	Outer carton

Wire bundles

6277821	Wire bundle, PCB2 - PCB5
6277822	Wire bundle, PCB3 - PCB5
6277823	Wire bundle, PCB3 - PCB6

Parts not shown

3375060	Product cover
3395305	Back-up suitcase
3629144	Special tool f/bezel
3629000	Screwdriver TX6
3629002	Screwdriver TX8

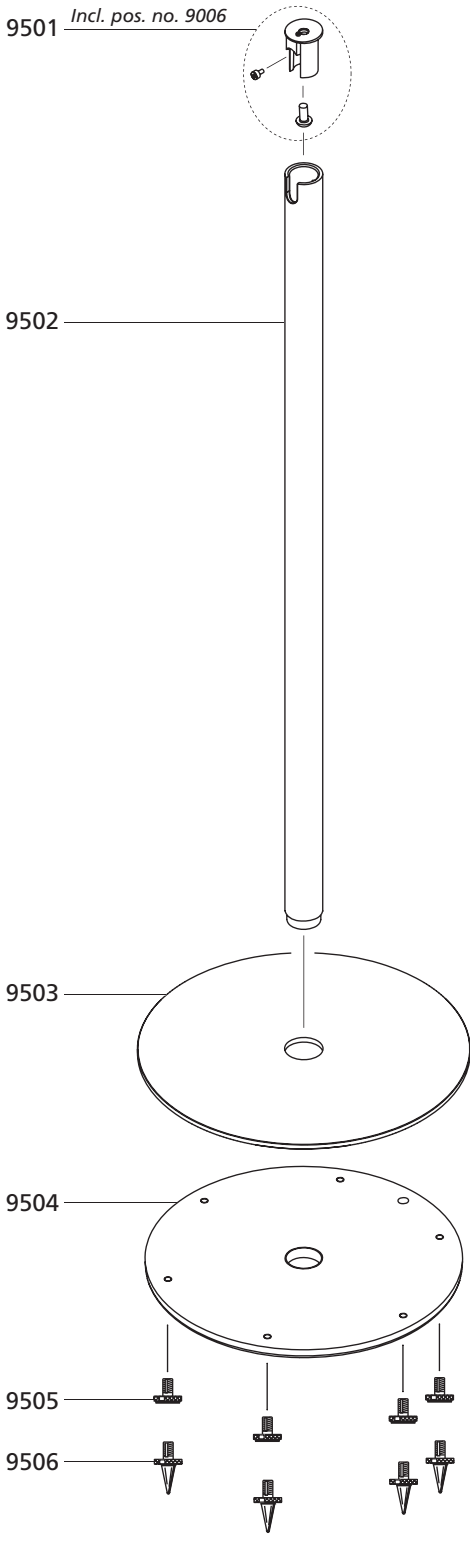
Accessories

6270077	Power Link cable, 0.5m black
6270078	Power Link cable, 2.5m black
6270079	Power Link cable, 5m black
6270080	Power Link cable, 10m black
6270081	Power Link cable, 20m black
6270082	Power Link cable, 2.5m white
6270083	Power Link cable, 5m white
6270084	Power Link cable, 10m white
6270085	Power Link cable, 20m white
6270856	Line/PL, 5m, black

Available documentation

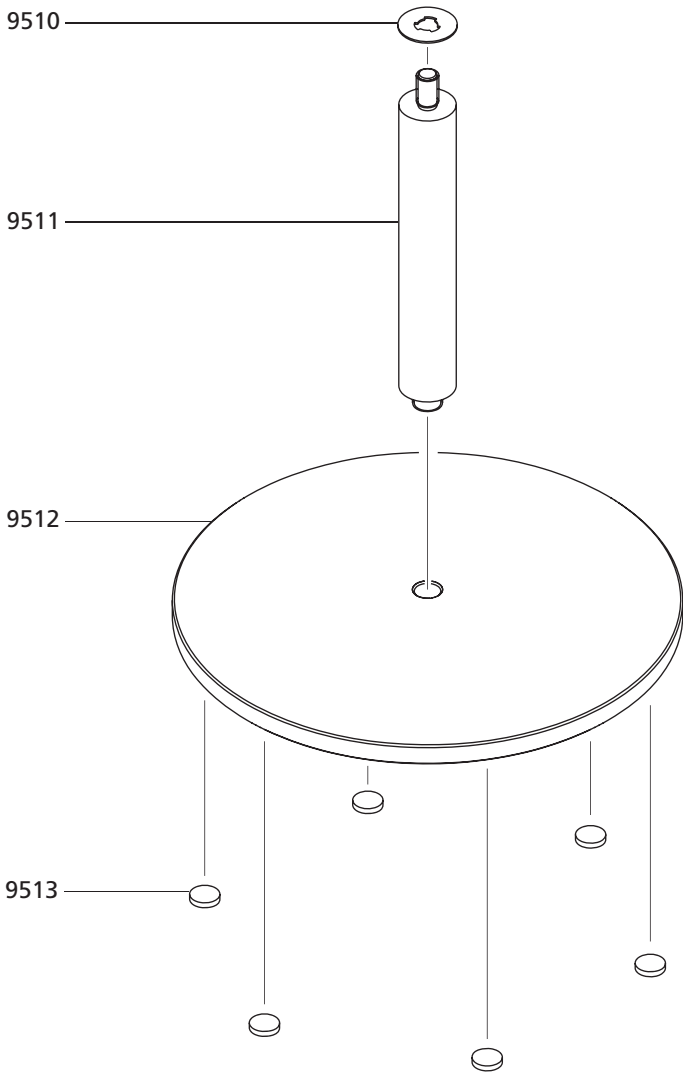
Guides, see Retail Ordering System

Floor stand 2165



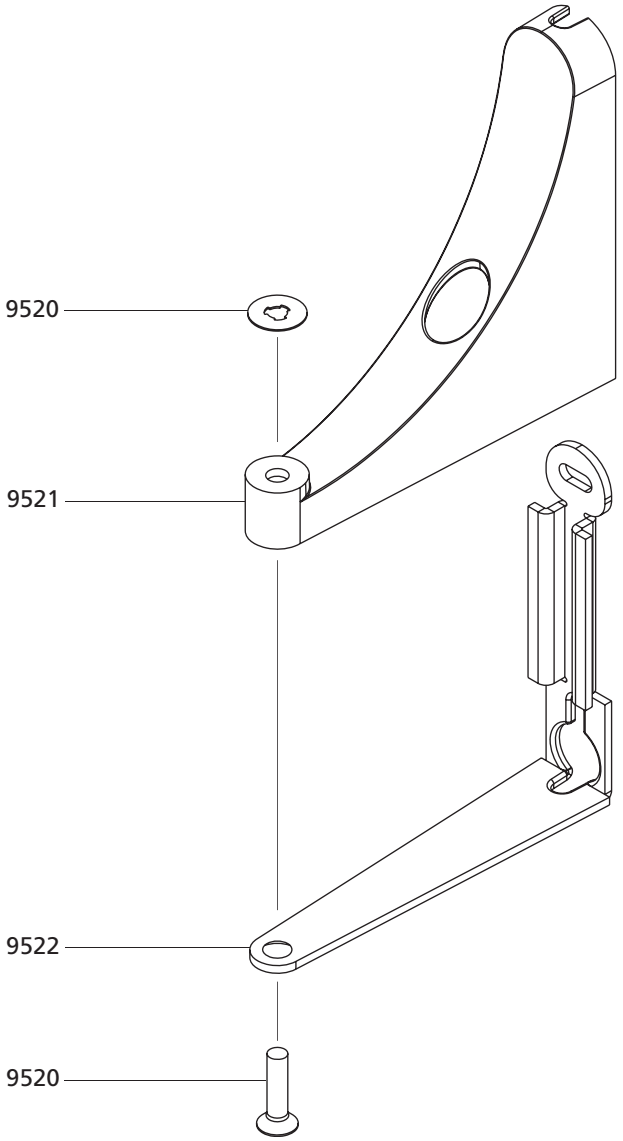
9501	3390647	Bag w/top, screws, spikes (9506), and 2 hexagon spanners
9502	2950239	Tube
9503	3459466	Cover w/tape
9504	2752048	Bottom w/tape
9505	3103392	Foot
9506	3103390	Spike
	3396205	Foam - order 2 pcs.
	3392780	Outer carton
	3504725	Guide

Table stand 2166



9510	2627000	Protection washer
9511	2950238	Tube
9512	2752046	Bottom
9513	3103358	Foot
	3396203	Foam - order 2 pcs.
	3392778	Outer carton
	3504726	Guide

Wall bracket 2167



9520	3390646	Bag w/protection washer, screw, and hexagon spanner
9521	2854225	Plate
9522	3151796	Fitting
	3396204	Foam - order 2 pcs.
	3392779	Outer carton
	3504727	Guide

Service hints and adjustment

Service Hints

Doing fault searching, the BeoLab 3`s LED can give you a hint.
If the LED turns orange in colour it can be a result of a thermal shutdown, remove the mains and let the speaker cool down. If the LED still light orange when the mains is connected again, then it is a indication of an internal error.

A internal error indication can be caused by many things, but the most likely is listed below.

1. The NTC module on the bass driver unit is not connected to the Main chassis, the plug is disconnected.
2. Tweeter unit is failing (How to measure the driver units is described later on this page)
3. Bass unit is failing (How to measure the driver units is described later on this page)
4. Error in Switch Mode Power Supply

How to measure the Driver units (treble/bass), using a Ohm-meter :

Dismantle the speaker to get access to the driver unit you want to measure.

Disconnect the unit completely

Measure with an Ohm-meter

The bass unit should be 4,0 Ohm +/- 10% (between 3,6 - 4,4 Ohm)

The treble unit should be 6,4 Ohm +/- 10% (between 5,7 - 6,9 Ohm)

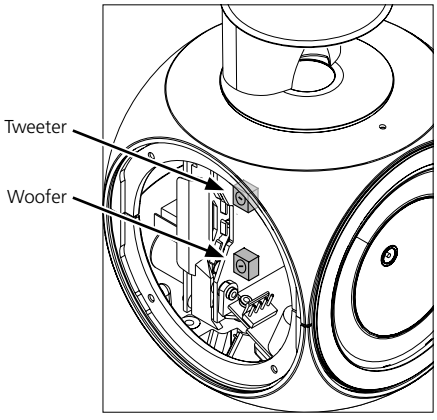
If the measurements are below the – 10% value, it indicates that the driver unit coil is shortcut.

If the measurements is over the + 10% value, it indicates that the driver unit coil is disconnected.

Adjustment after driver unit or Main chassis replacement

When a driver or a Main chassis is replaced, the driver unit levels needs to be adjusted, so the speaker once again is in accordance with specifications.

The adjustment is done with two click-potentiometers, one for treble level adjustment and one for bass level adjustment. Each potentiometer haves 10 step (10 * 0,5 dB) and is located on module 03, on the Main chassis.



Remove the left slave unit, to gain access to the potentiometers.

When the Main chassis is replaced, the potentiometers on the new chassis are set to the same value (click) as the old chassis. No further adjustment is used, as long as the driver units not have been replaced.

When a driver unit is replaced, either treble or bass, you will need to perform an adjustment on the two potentiometers. On the new service driver unit there will be a dB value stated on the back. This value is used along with the table below to adjust the correct potentiometer.

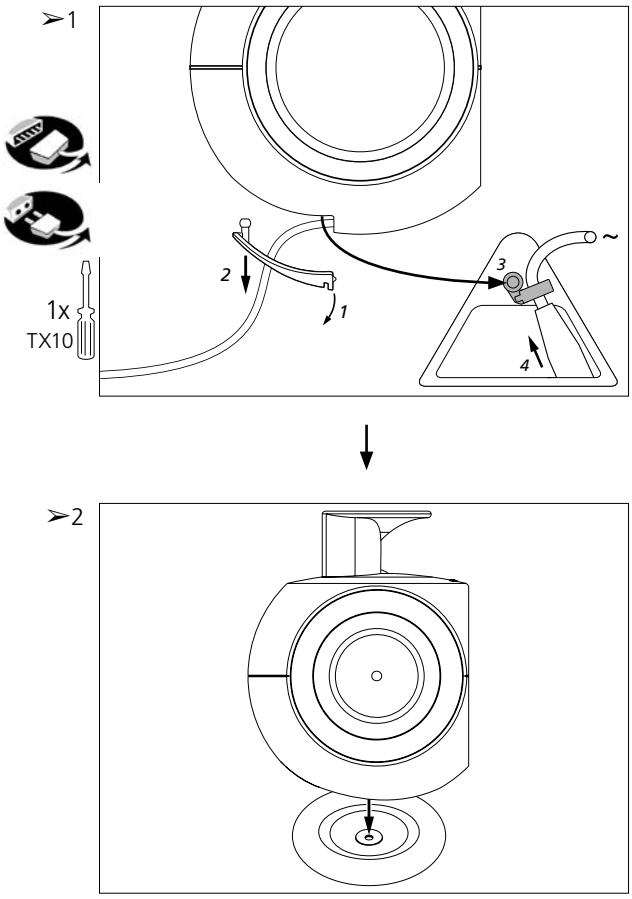
Bass adjustment (the lower potentiometer)

Stated value on the service driver unit	Position of the click-potentiometer
3,5 - 3,8	0
2,6 - 3,4	1
1,8 - 2,5	2
1,1 - 1,7	3
0,4 - 1,0	4
-0,3 - 0,3	5 (0 dB level)
-0,4 - -0,9	6
-1,0 - -1,7	7
-1,8 - -2,4	8
-2,5 - -2,8	9

Treble adjustment (the upper potentiometer)

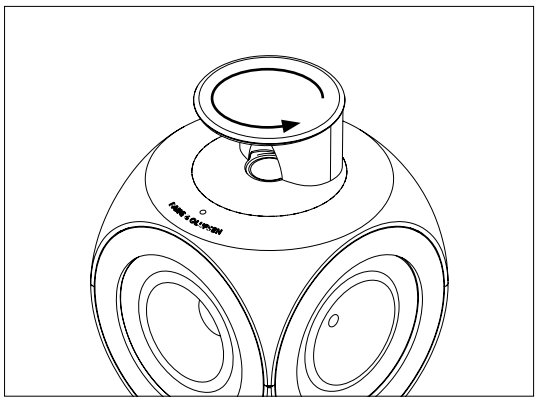
Stated value on the service driver unit	Position of the click-potentiometer
3,1 - 3,7	0
2,4 - 3,0	1
1,7 - 2,3	2
1,0 - 1,6	3
0,4 - 0,9	4
-0,3 - 0,3	5 (0 dB level)
-0,4 - -0,8	6
-0,9 - -1,5	7
-1,6 - -2,2	8
-2,3 - -2,7	9

BeoLab 3 in serviceposition



Replace Top plate

➢1



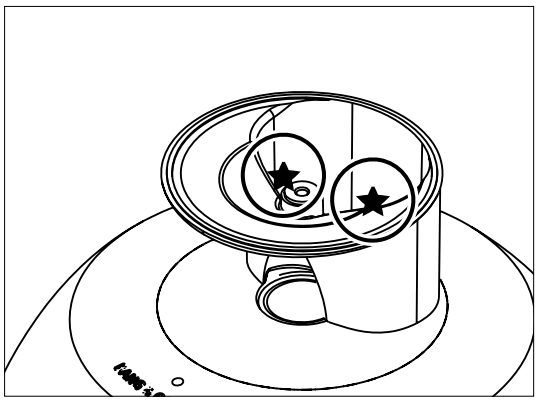
Replace Acoustic lens

See page 6.1, BeoLab 3 in serviceposition

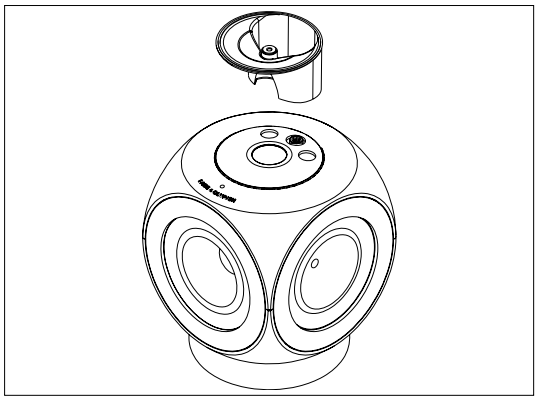
See page 6.2, Remove Top plate

➢1

2x
TX15



➢2



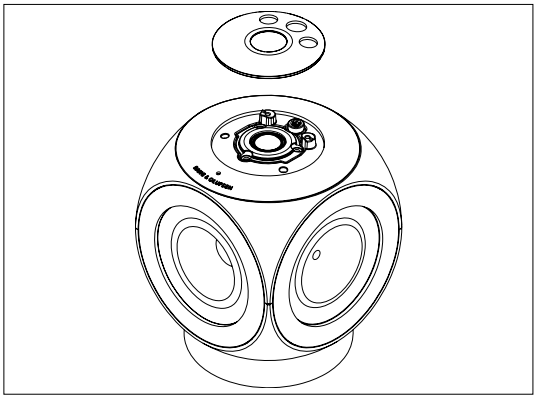
Replace tweeter cover

See page 6.1, BeoLab 3 in service position

See page 6.2, Remove Top plate

See page 6.3, Remove acoustic lens

➢1



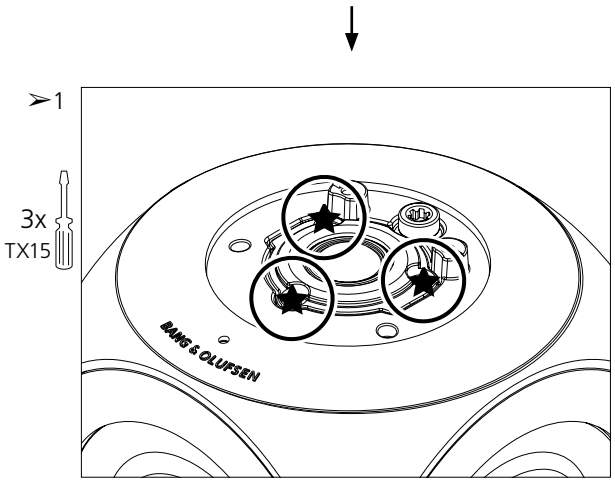
Replace Tweeter

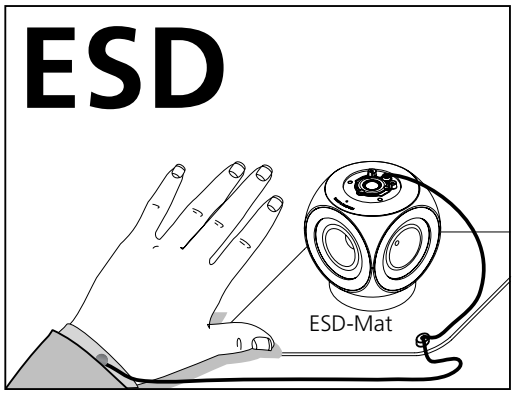
See page 6.1, BeoLab 3 in service position

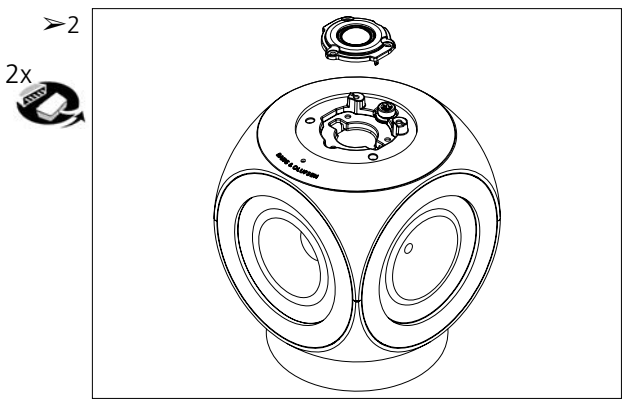
See page 6.2, Remove Top plate

See page 6.3, Remove acoustic lens

See page 6.4, Remove tweeter cover



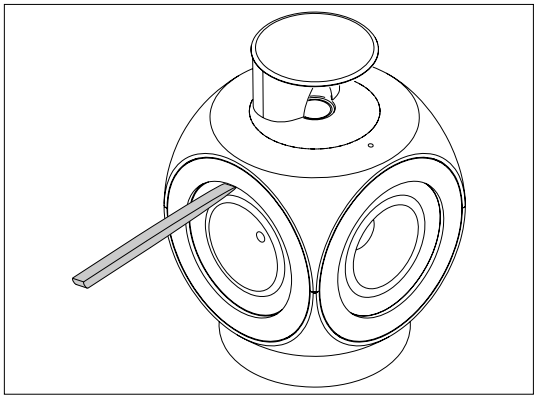




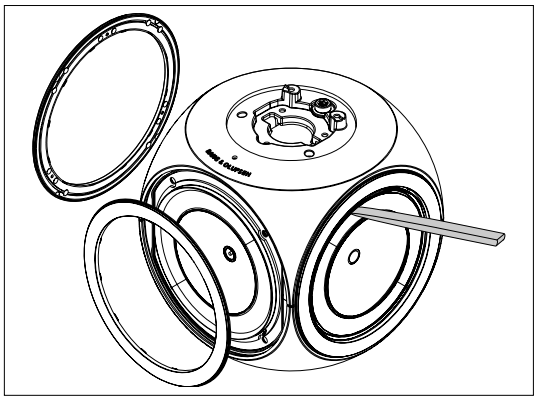
Replace Bezel

See page 6.1, BeoLab 3 in service position

➢1



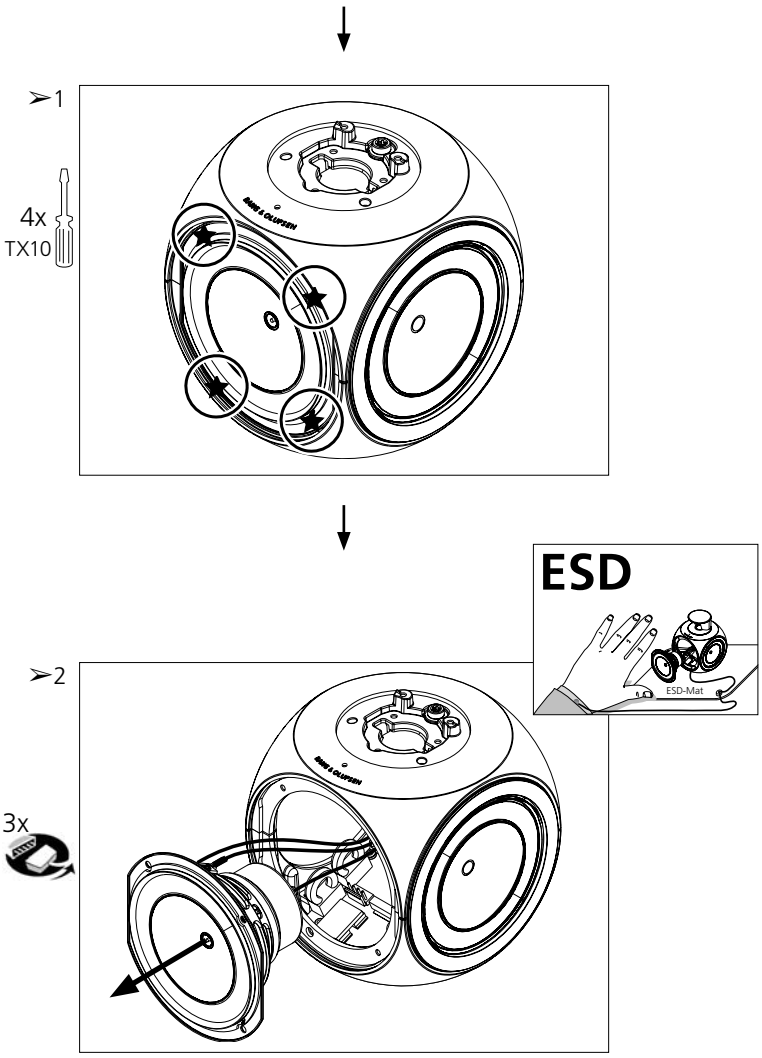
➢2



Replace woofer

See page 6.1, BeoLab 3 in serviceposition

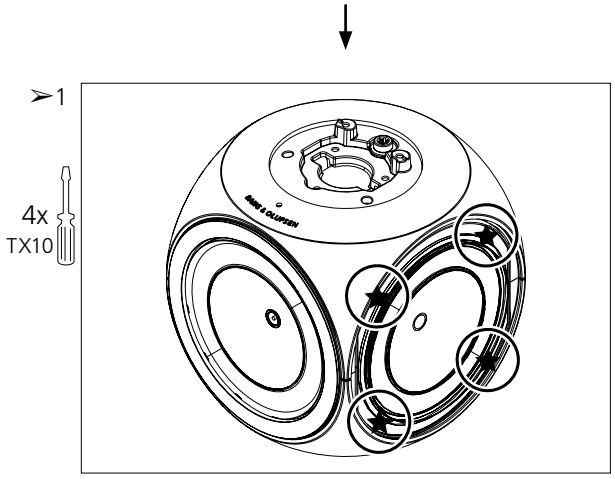
See page 6.6, Remove Bezel

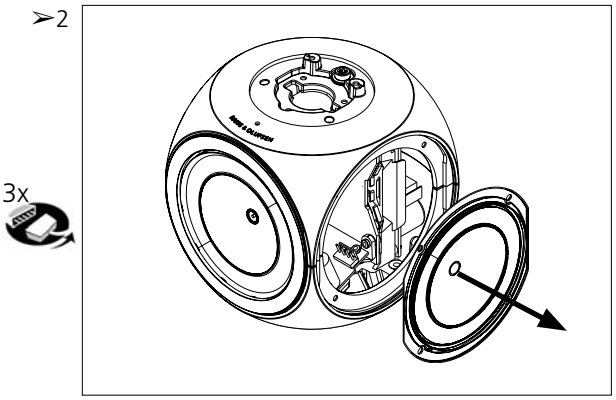


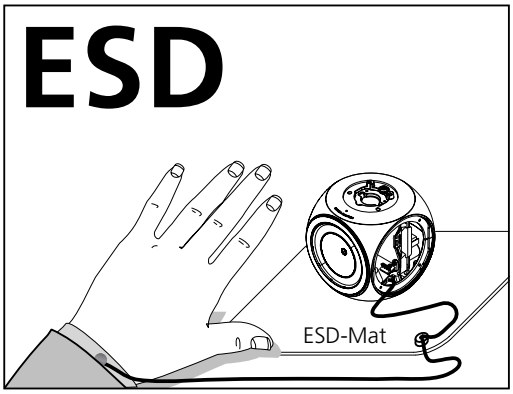
Replace passive radiator

See page 6.1, BeoLab 3 in serviceposition

See page 6.6, Remove Bezel







Replace PCB 5

See page 6.1, BeoLab 3 in serviceposition

See page 6.2, Remove Top plate

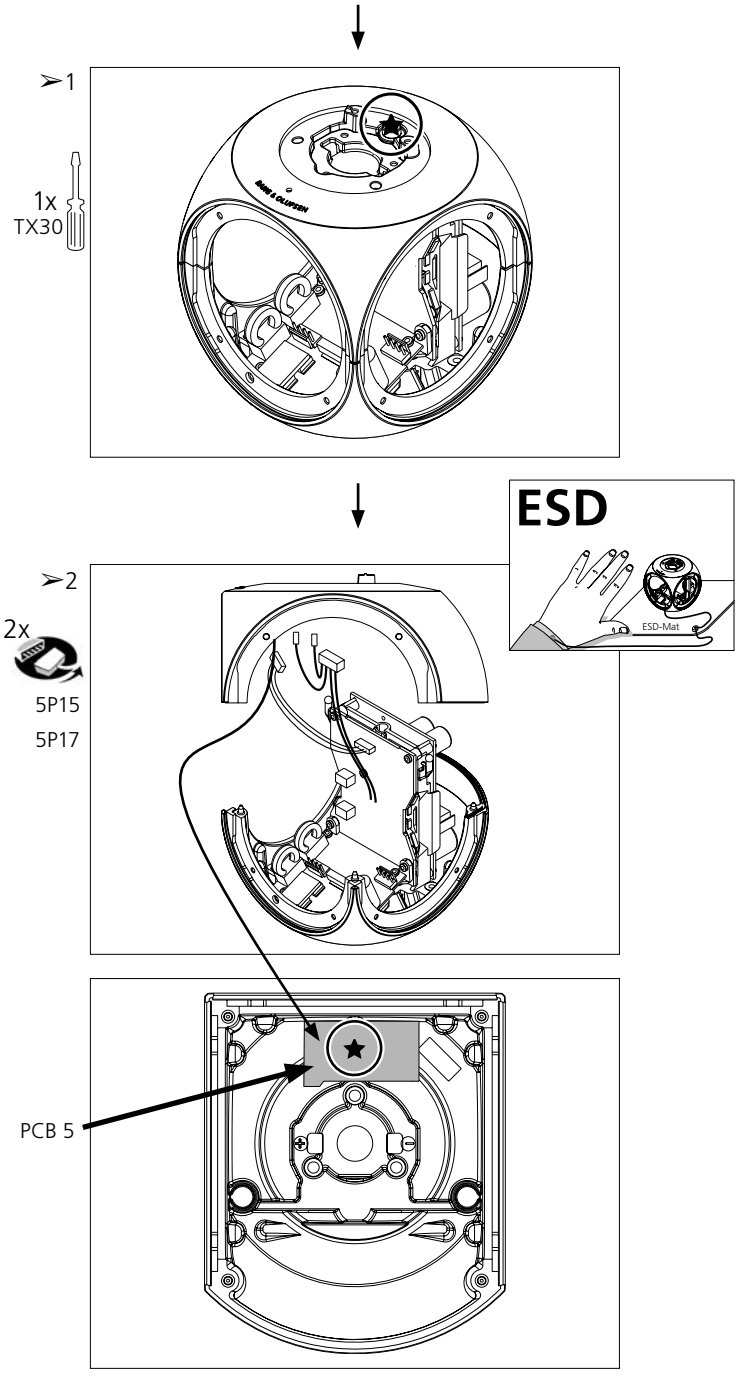
See page 6.3, Remove Acoustic lens

See page 6.4, Remove Tweeter cover

See page 6.6, Remove Bezels

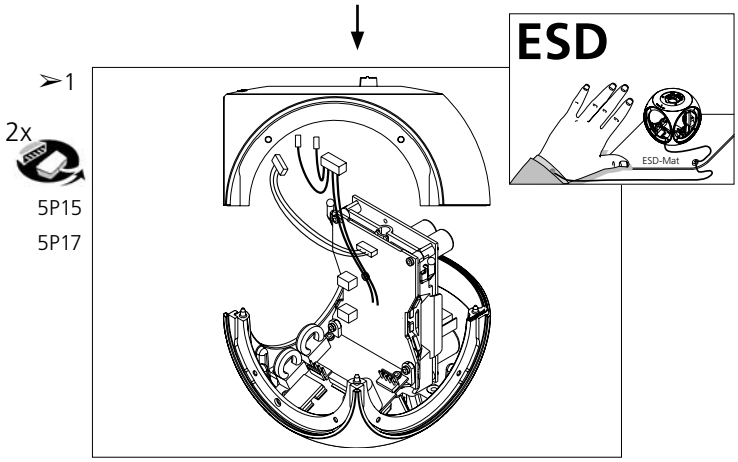
See page 6.7, Remove Woofer

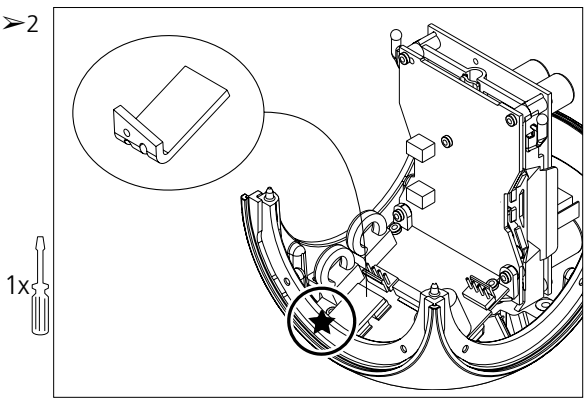
See page 6.8, Remove Passive radiators

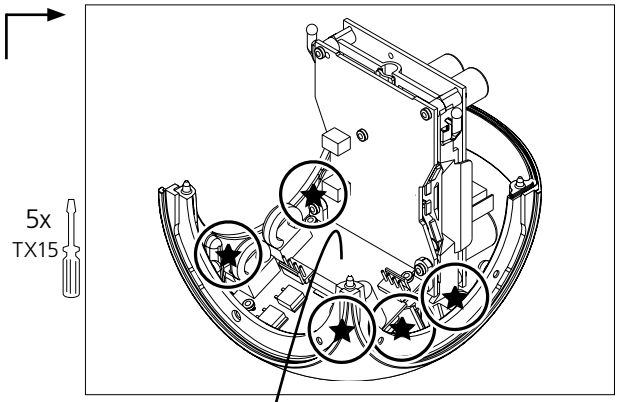


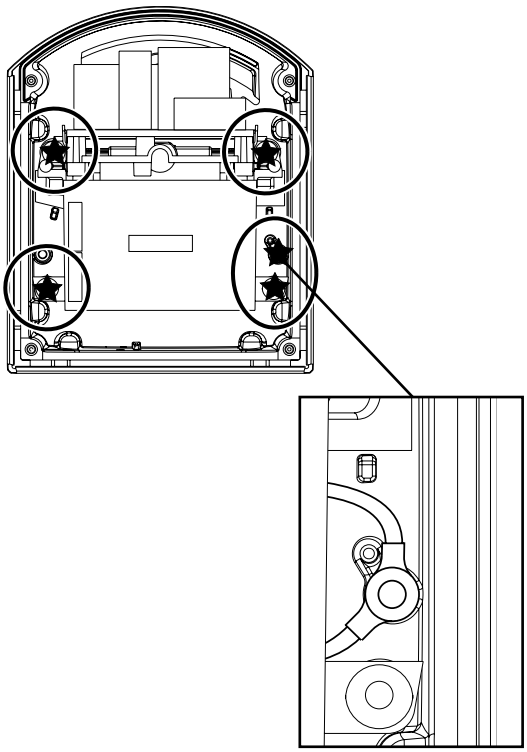
Replace main chassis

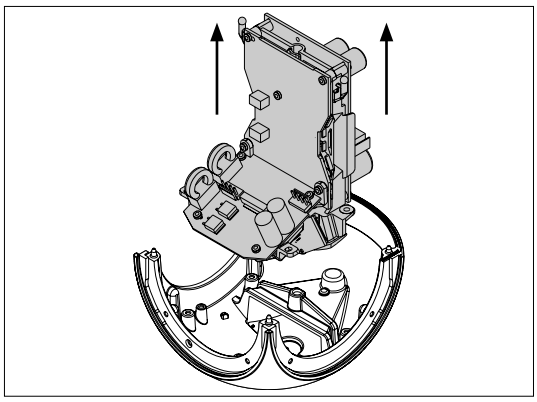
- See page 6.1, BeoLab 3 in serviceposition
- See page 6.2, Remove Top plate
- See page 6.3, Remove Acoustic lens
- See page 6.4, Remove Tweeter cover
- See page 6.5, Remove Tweeter
- See page 6.6, Remove Bezels
- See page 6.7, Remove Woofer
- See page 6.8, Remove Passive radiators





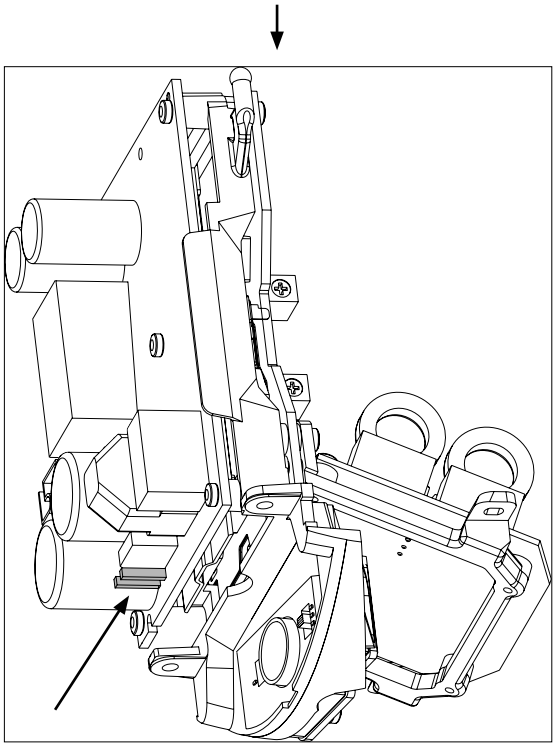






Converting mains voltage supply

See page 6.10, Remove main chassis



Insulation test

BeoLab 3 must be insulation tested if it has been dismantled.
Make the test when the BeoLab 3 is reassembled and is ready to be returned to the customer.

Insulation test at the Service center

Short-circuit the two pins of the mains plug and connect them to one of the terminals of the Insulation tester. Connect the other terminal of the insulation tester to ground on the Power Link socket.
To avoid damaging the BeoLab 3, it is essential to ensure that both terminals of the insulation tester have good contact.
Slowly turn up the voltage control of the insulation tester until a voltage of 2.5kV(ac) is obtained.
Maintain that voltage level for one second, then slowly turn it down again.
During the testing the current must not exceed 5mA.

Insulation test at the customer

Remove the mains cable from the wall outlet.
Place a jumper across the two AC plug prongs.
Use a multi-meter, set for measurements in the Ohm-area.
Place one lead from the multi-meter on the AC plug and place the other lead on ground at the Power Link plug.
The resistance during this measurement must be of 1 Mega Ohm or more.
Resistance measured below 1 Mega Ohm indicates an abnormal situation and corrective action must be taken.

Please note:

Avoid all skin contact with the AC plug and all other metal parts while performing the test, as this contact may influence the measurement.

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